

Sea Level Adaptation Working Group

Developing a Regional Approach

Direct Participation:



Science/Technical Support:



Additional Support Funding:



Maine Coastal Program

The 4 Community Region



First thing is First 2010 Vulnerability Assessment

Sea Level Rise
And Potential Impacts by the Year 2100

A Vulnerability Assessment
for the Saco Bay Communities of
Biddeford, Saco, Old Orchard Beach, and Scarborough



A Report of the Sea Level Adaptation Working Group
Original Report December 31, 2010
Revised May 4, 2011
With the Assistance of the
Maine Department of Conservation – Maine Geological Survey
and the
Southern Maine Regional Planning Commission
With Funding from the Maine State Planning Office & Maine Coastal Program
NOAA Grant Number NAD9NOS4-190091
and the Participating Partner Communities



The first effort: **SLAWG** Assessment

Vulnerability Assessment of the built and natural environments to 2 feet of SLR (agreed upon by the Group) on top of the Highest Annual Tide (HAT) and the historic 1% (“100-year”) storm event (February 7, 1978 storm) for each community in Saco Bay. Identified potentially vulnerable buildings, transportation infrastructure, and wetland migration areas.

Outgrowth of the Vulnerability Assessment



Sea Level Adaptation Working Group

Steering Committee

- In 2010 the Group developed an **Interlocal Agreement** outlining the creation of a Working Group and its duties and action plan.
- Received approval from each municipal council.
- Originally Funded by Regional Challenge Grant (SPO) and local matches of \$3,100 per community also helps to fund this program.
- Until 2014 it was funded by the Department of Agriculture, Conservation and Forestry within the Southern Maine Planning and Development Commission (SMPDC) Coastal Grant program and a \$3,100 match from each community
- Now we just fund the program with the \$3,100 match from each community

Working Group

- Comprised of assigned members; 1 municipal planner and 1 citizen at-large from each community; SMPDC planner; technical support from MGS.
 - Completed a **Vulnerability Assessment** and produce a preliminary report that was submitted to municipal councils for approval.
 - The Group(s) current make is as follows:
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Who is SLAWG

Lucy LaCasse	Scarborough	
Tom Hall	Scarborough	
Jay Chace	Scarborough	Town Planner
Jeffery Hindliter	Old Orchard	Town Planner
Louise Reid	Old Orchard	
Dr. Stephen Zeemen	Biddeford	(currently on sabbatical)
John Bubier	Biddeford	
Greg Tansley	Biddeford	Town Planner
Bob Hamblen	Saco	Town Planner
Marston Lovell	Saco	
Peter Marks	Saco	
Peter Slovinsky	State of Maine DACF	Consultant to the Committee
Lee Jay Feldman	SMPDC	Staff to the Committee

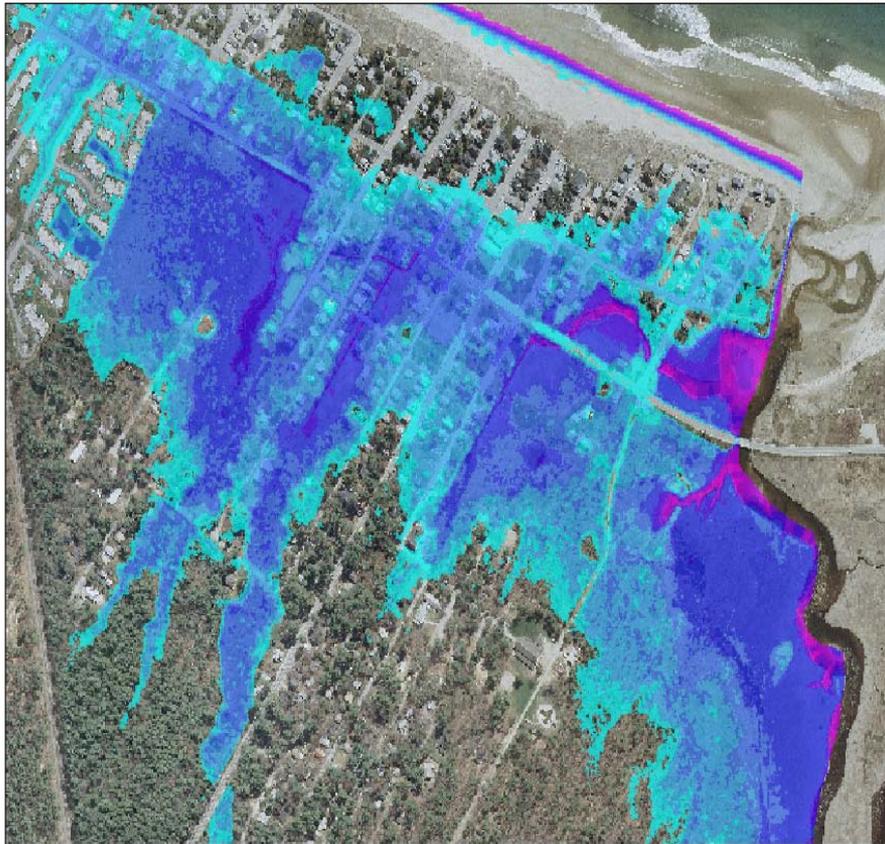


SLAWG Successes:

- **First regional “Vulnerability Assessment” in Maine**
 - **Legitimized process through community involvement**
 - **Blazed the path for regional work with a municipal partnership approach**
 - **Created a model of transferability**
 - **Developed focused Implementation Strategies...or the “low hanging fruit” being implemented**
 - **Used highly-accurate LiDAR data to much more accurately set the regulatory Shoreland Zoning Boundaries (first communities in Maine – Old Orchard Beach and Saco)**
 - **Added sea level rise into existing Floodplain Management ordinances; 1 foot to 3 feet freeboard (first in Maine – Saco)**
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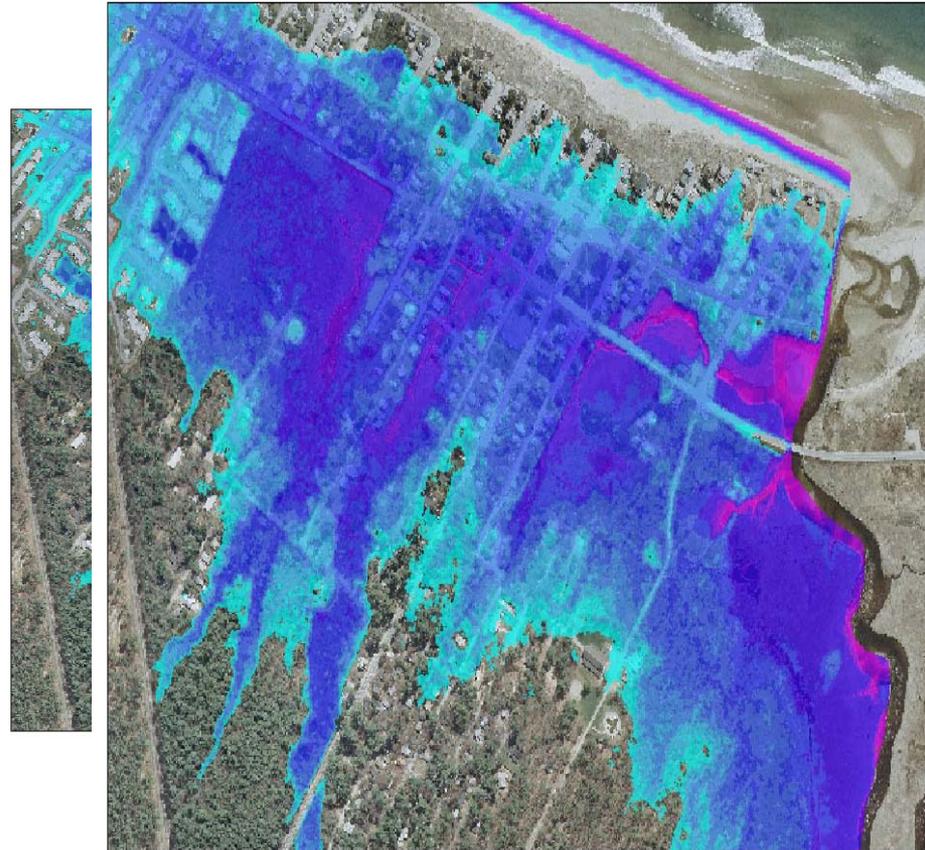
2007

2007 Patriots' Day Storm



Simulate potential future storm impacts

2007 Patriots' Day Storm
Plus 2 feet of Sea level Rise



Patriots Day 2007 Actual Storm Event vs. HAT

Temple St.
2-3 feet flooding

+2' Visualization Techniques
(CanVis2.3)



Adaptation Techniques





Wetland Restoration
Open Space Designation/Acquisition
“Future” Flood or Wetland Areas



Current Work Effort



Appendix D: Assessment of Potential Impacts to Roads: City of Biddeford

Road Name	Road Type	Highest Annual Tide (+ SLR in feet)					1% Storm Event (+ SLR in feet)					Hurricane	
		HAT	HAT+1	HAT+2	HAT+3.3	HAT+6	1%	1%+1	1%+2	1%+3.3	1%+6	Cat1	Cat2
		Bay St	Local										
Bayberry Rd	Local									175		674	
Beach Ave	Local			87	210	217	42	160	217	217	217	217	
Beach House Ln	Local			343	777	1124	181	635	1014	1124	1124	1124	
Beach Rose Way	Local			130	208	222	96	185	222	222	222	222	
Brackett Point Rd	Local					33				7	74	6	
Breakwater Ave	Local					370				56	643	167	
Bridge Rd	Secondary		59	72	420	887	100	151	491	760	936	811	
Channel Cove Ln	Local				44	191		14	82	161	253	174	
Cleaves St	Local										221	98	
Clifford St	Local											141	
Crane Ave	Private			76	217	229	58	174	229	229	229	229	
Crestwood Dr	Local											21	
Deerwander Rdg	Local										33	155	
E Crescent Cove Ln	Local					310				153	499	151	
Edgewater Pl	Local				56	156			127	156	156	156	
Elizabeth Rd	Local					235				80	693	102	
Elphis St	Local					40				7	231	30	
Fifth St	Local											134	
First St	Local										196	334	
Fortunes Rocks Rd	Local	156	271	627	3531	6466	636	2714	4093	5520	7686	5488	
Fourth St	Local										103	309	
Gilbert Pl	Local		93	414	414	414	414	414	414	414	414	414	
Golden Ave	Local			10	41	247	3	26	54	77	414	89	
Goldthwaite Ln	Local										313	388	

Example of Regulatory Restriction Analysis for HAT + 3.3 ft Scenario - Biddeford, ME

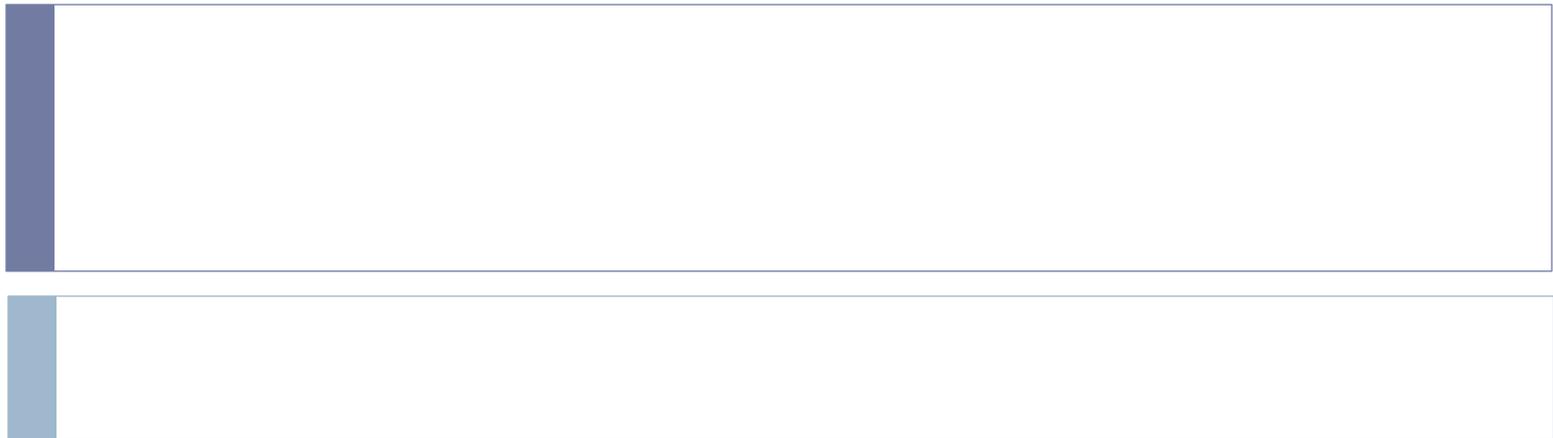
Road Name	Road Type	Length of Road (ft)	Existing* Flood Zone	Dune Bounds**
Beach Ave	Local	210	AE	D2
Beach House Ln	Local	777	VE, AE	D1, D2, EHA
Beach Rose Way	Local	208	AE	D1, D2, EHA
Bridge Rd	Secondary	420	AE	D2
Channel Cove Ln	Local	44	AE	
Crane Ave	Private	217	AE	D2
Edgewater Pl	Local	56	AE	D2
Fortunes Rocks Rd	Local	3531	AE	D1, D2, EHA
Gilbert Pl	Local	414	AE	D2
Golden Ave	Local	41	AE	D2
Granite Point Rd	Local	3399	AE	D1, D2, EHA
Hills Beach Rd	Local	2220	VE, AE	D1, D2, EHA
Landing Way	Local	4	AE	
Lily Pond Ave	Local	75	AE	
Long Ave	Local	17	AE	D2
Maddox Pond Rd	Local	113	AE	
Mile Stretch Rd	Secondary	3998	AE	D1, D2, EHA
Ocean Edge Ln	Local	27	AE	D2
Private Way Ln	Local	85	AE	D2
Sea Spray Dr	Local	454	VE, AE, X	D1, D2, EHA
Seal Ln	Local	89	AE	
Sky Harbor Dr	Local	50	VE	
Thorndike Ave	Local	77	AE	D1, D2
Timber Point Rd	Local	2110	VE, AE	D1
Yates St	Local	581	AE, X	

* analysis based on preliminary FEMA Flood Mapping products from 2013

** analysis based on the effective coastal sand dune boundaries, as delineated by MGS

Streets impacted by SLR & Storm Surge

❖ Saco	54
❖ Biddeford	75
❖ Old Orchard Beach	108
❖ Scarborough	166



Issues to Consider



• ***Start small but think big.*** Originally, SLAWG hoped to investigate not only potential road impacts, but impacts to associated utilities such as stormwater, sewer, culverts, etc. SLAWG decided, at this point, to focus solely on road impacts. However, communities should *consider the impacts to larger associated public infrastructure systems, and the different players (local, regional, and state) that may need to be involved.* Considering infrastructure improvements to at-risk roads only will automatically bring many of these other systems into consideration.



• ***Continued Education is required.*** Continued education of citizenry is required in order to educate the public on impacts to the infrastructure and the financial implications of doing nothing.

• ***On going infrastructure analysis.*** Additional study is required in order to look at the other infrastructure pieces such as sewer treatment plants, pump stations, etc...



Consider regulatory environmental factors. Consider regulatory environmental factors. SLAWG examined (as an example the Highest Annual Tide plus 3.9 foot scenario) some of the potential constraining environmental factors to engineering or adaptation efforts of municipal roads. These included whether or not the road is located within a regulated coastal sand dune (either frontal dune, D1, or back dune D2, or in an Erosion Hazard Area, or EHA); or the existing mapped 100-year floodplain, per the preliminary FEMA maps (either a VE-zone, AO-zone, AE zone, 0.2 percent chance or 500-year zone, or an X-zone, outside of the 500-year floodplain). This will help guide how a road may be adapted under existing regulatory language. The results of this analysis are provided behind each table in the appendix designated by community. Any improvements should be sure to meet other environmental or regulatory constraints such as habitat, shoreland zoning, and other Land use related regulatory requirements.



What Projects are we working on Now?

- ▶ Saco adopted a 3' freeboard requirement in the Flood plain related to SLR considerations
- ▶ Scarborough under a separate grant is studying Marsh Migration and the impacts to the community (Pete Slovinsky)
- ▶ Saco along with SMPDC is developing a Beach Management plan.
- ▶ Army Corp is Moving forward with a proposal to address Camp Ellis(A Beach Management Plan must first be developed for Federal sign off)
- ▶ We have applied for a TIGER Grant to study Cat I & Cat 2 Hurricane impacts to the Rail line in OOB and Scarborough as well as State Route 9 in OOB/Scarborough and Well/Kennebunk
- ▶ Developing a Comprehensive Plan Chapter on SLR for Old Orchard Beach
- ▶ Developing a Comprehensive Plan Chapter on SLR for Biddeford

